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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,477	01/31/2002	Victor E. Braman	GC-218	3702

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EXAMINER

KUHAR, ANTHONY J

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/061,477

Applicant(s)

BRAMAN ET AL.

Examiner

Anthony J Kuhar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 11, 63, 101, 111. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1-3 and 6-10 are objected to because of the following informalities:

In claim 1, step C and claim 2, improper Markush language is used: "selected from the group consisting of" is suggested.

In claim 3, "calcium chloride" appears to be calcium carbonate- since no process steps for making calcium chloride from calcium carbonate are recited.

In claim 5, "to impounded" is ungrammatical.

In claim 5, "about18%" should be -about 18%-.

In claims 6-9, "separated or combined waste streams" are unclear as to which streams in the process of claim 1 is being considered as "separated" or "combined".

In claim 10, "is received" is ungrammatical and unclear.

In claim 10, "other known sodium salt evaporation/crystallization processes" is unclear as to what these processes are.

Appropriate correction is required.

Claim 7 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 6.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "relatively depleted" in claim 1 is a relative term which renders the claim indefinite. The term "relatively depleted" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 1 recites the limitation "the concentrated product of step c". There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the lesser sodium carbonate bearing waste streams". There is insufficient antecedent basis for this limitation in the claim.

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Claim 5 recites the limitation "the higher concentrated sodium bearing waste streams".

There is insufficient antecedent basis for this limitation in the claim.

Claims 6, 7, and 9 recite the limitation " the specific sodium carbonate salt species".

There is insufficient antecedent basis for this limitation in the claim.

Claims 8 and 9 recite the limitation "the instant patent". There is insufficient antecedent basis for this limitation in the claim.

Claims 10 recites the limitation "the purge stream in step b". There is insufficient antecedent basis for this limitation in the claim.

Claim 11 is indefinite as it has no process step, see Ex parte Erlich 3 USPQ2d 1011, 1017 and MPEP 2173.05(q).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Copenhafer '054 in view of Dome '882.

Copenhafer '054 teaches a process in Figure 1 and column 13, line 12 to column 17, line 63 where brine is obtained by contacting water with an underground trona formation. This brine is stripped with steam and neutralized to reduce sodium bicarbonate content. Then, it is fed to two sodium carbonate decahydrate crystallizers. The mother liquor from the second crystallizer is purged. The sodium carbonate decahydrate crystals are then added to a dissolver. In the dissolver, caustic soda is added to the crystals in the dissolver (see column 17, line 24), thus the crystals are used to dilute a less concentrated sodium salt blend, which is the caustic itself. Sodium carbonate monohydrate is subsequently crystallized. The recycle liquor from the decahydrate process is used to concentrate a less concentrated sodium carbonate stream, namely to the solution mining inlet solvent or to the causticization unit (see column 16, line 1 to column 17, line 4).

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Column 15, lines 52-67 teach diluting the brine entering the causticization unit to avoid calcium carbonate coating the lime particles. Clarifier 13A is used to separate muds from the sodium solution, thus it appears that calcium carbonate is separated from the solution after causticization.

Column 13, line 23 teaches a lesser sodium carbonate bearing stream having a concentration of 13-16% sodium carbonate. This would include the waste mother liquor from the decahydrate crystallizer, and thus comprises a waste stream. Column 16, line 32 teaches higher sodium carbonate bearing stream having a concentration of 20-30% sodium carbonate. Copenhafer '054 does not teach wasting a purge stream from one of the steps up to and including the decahydrate crystallization to a surface evaporation pond.

However, surface evaporation ponds are taught in Dome '882 as a system for disposal of unwanted waste water and by-products (see column 1, lines 15-32). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to waste a purge stream to a surface evaporation pond because this is a commonly known method in trona ore mining to relieve the process of undesired purities.

Claims 1, 2, 4-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frint '134 in view of Dome '882.

Column 14, line 33 teaches decarbonizing a feed brine by evaporation, which liberates carbon dioxide. Column 16, lines 23-66 teach precipitated sodium sesquicarbonate, which further decarbonizes the brine. Column 17, line 3 to column 17 line 25 teaches crystallizing sodium carbonate decahydrate. Column 17 lines 19-35 teach that part of the mother liquor from

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the decahydrate process is purged. The other part can be used to concentrate the solution entering the initial evaporator or to increase the alkali content of the mining solution used to mine the trona. Column 17 line 37 to column 18 line 38 teaches that the decahydrate crystals are then passed to recycling stream of sodium carbonate which returns to a sodium carbonate monohydrate crystallizer.

Column 7, lines 31-32 teach a lesser carbonate bearing stream that is 13-16% sodium carbonate. This would include the waste mother liquor from the decahydrate crystallizer, and thus comprises a waste stream. Column 13, line 12 teaches a higher concentrated sodium bearing waste stream where the solution produced by melting the decahydrate crystals has a 30% sodium carbonate concentration. Frint '134 does not teach wasting a purge stream from one of the steps up to and including the decahydrate crystallization to a surface evaporation pond.

However, surface evaporation ponds are taught in Dome '882 as a system for disposal of unwanted waste water and by-products (see column 1, lines 15-32). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to waste a purge stream to a surface evaporation pond because this is a commonly known method in trona ore mining to relieve the process of undesired purities.

Claims 1, 2, 4-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith '497 in view of Dome '882.

Smith '497 teaches in column 5, line 32 to column 11, line 11 teaches evaporating water from a solution mined brine to release carbon dioxide (decarbonize) the stream. The stream is then stripped with steam. Then, bicarbonate depleted stream is neutralized with caustic to

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produce a less than 2% bicarbonate containing stream. After, crystallizing sodium carbonate monohydrate, the mother liquor from the sodium carbonate monohydrate process is sent to a decahydrate crystallizer. The seeds from the crystallizer are then sent to the stream from the neutralization process, which decahydrate crystals appear to concentrate the less concentrated neutralized stream (232). The combined neutralization stream and sodium decahydrate crystals are then used to feed a monohydrate crystallizer. The purge stream from the decahydrate process can be used to feed the decahydrate crystallizer (see column 11, line 6).

Column 5, lines 36-37 teach a lesser sodium carbonate bearing stream, where the aqueous brine has at least 10% total alkali. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, in re Malagari, 182 USPQ 549. Although not disclosed by Smith '497, it appears the stream entering the monohydrate crystallizer would be a higher concentrated sodium bearing waste stream since decahydrate crystals were dissolved into the neutralized stream and waste mother liquor from the monohydrate process is also added to the neutralized stream via line 264. Smith '497 does not teach wasting a purge stream from one of the steps up to and including the decahydrate crystallization to a surface evaporation pond.

However, surface evaporation ponds are taught in Dome '882 as a system for disposal of unwanted waste water and by-products (see column 1, lines 15-32). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to waste a purge stream to a surface evaporation pond because this is a commonly known method in trona ore mining to relieve the process of undesired purities.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J Kuhar whose telephone number is 703-305-7095. The examiner can normally be reached on 8:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

AK
July 28, 2003


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